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ABSTRACT

The major needs of career and technical education (CTE) in the year 2000 were assessed. The regional needs-sensing networks of the National Dissemination Center and the National Research Center for Career and Technical Education were used to obtain input from members of the following stakeholder groups: state-level liaisons; representatives of professional and business/industry associations with an interest in CTE; faculty representatives of universities preparing CTE teachers; instructors of secondary and postsecondary CTE programs; and representatives of Native American nations and associations of racial/ethnic groups. Priorities related to the following areas of the CTE field were identified through 30 conference calls with 149 representatives of the 7 stakeholder groups: improving the image of CTE; exemplary practices; partnerships; teaching-learning; clearinghouses; instructors/administrators; professional development; technology and distance education; assessment; implications of the Workforce Investment Act of 1998; skill shortages and basic skills; and multiple problems of constituents. (The following items are appended: description of

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the methods used to analyze the regional reports; report on the University of Illinois' test of Webboard; list of topics of information requests received by the question and answer service; samplings of postings to the Careertech discussion of the role/image of CTE; and list of participants in need-sensing networks through 2000.) (MN)

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Major Needs of Career and Technical Education in the Year 2000:

Views From the Field

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Views From the Field

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FOREWORD

The need sensing results presented in this report were produced through collaboration between the two National Centers for Career and Technical Education. The Site Directors at each university in the National Centers consortium, with the assistance of their field liaison representatives, established the need sensing networks that provided much of the information that is synthesized in this report.

I, and on behalf of my counterpart at the Research Center, Dr. Charles Hopkins, want to thank the Site Directors and their field liaison staff for all the hard work that was necessary to develop this information. To the following individuals we extend our sincere appreciation:

The Pennsylvania State University: Dr. Edgar Farmer and Dr. Ferman Moody
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Dr. Morgan Lewis of the Dissemination Center coordinated the need sensing effort and prepared this report. As stated on the funding page, the contents reflect the views of its author and are not necessarily the position or policies of the Office of Vocational and Adult Education or the U.S. Department of Education.

Floyd L. McKinney
Director, National Dissemination Center for
Career and Technical Education

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EXECUTIVE SUMMARY

The National Dissemination Center and the National Research Center for Career and Technical Education are using several methods to identify the needs of the field. The information produced is used to guide the activities of the Centers. The most extensive of the methods are regional need sensing networks. There are five universities in the consortium that operates the Centers. The 50 states are divided into five regions and each of the universities has responsibility for establishing networks with these seven stakeholder groups within its region:

1. State-level liaisons appointed by the state directors for CTE
2. State-level liaisons appointed by the state directors for community colleges
3. Representatives of professional and business/industry associations with an interest in CTE, including labor unions
4. Faculty representatives of colleges and universities preparing CTE teachers
5. Instructors from school districts that offer CTE programs
6. Instructors from postsecondary institutions that offer CTE programs
7. Representatives of Native American nations and associations of racial/ethnic groups

During the year 2000, 30 conference calls were conducted with 149 representatives of these groups. The data from these calls, together with that from other sources such as brainstorming with the National Centers' Advisory Council and discussion on the CAREERTECH listserv, were analyzed to identify the major needs facing the field. This analysis yielded the needs presented in the following list. The list is in a rough priority order as indicated by the number of sources identifying the need and the amount of discussion concerning the need.

Improve the image of CTE: The underlying theme was the need to change the perception that CTE offers an inferior curriculum, appropriate only for those students who cannot meet the demands of a college preparatory program.

Exemplary practices: Identifying and disseminating information about exemplary, or best, practices. The comments reflect a general sense that there are many successful programs and that information about them should be documented and widely disseminated.

Partnerships: Almost all of these comments referred to the need to develop partnerships as a means of keeping programs relevant and aligned with the needs of employers.

Teaching-learning (integration, relevancy): Many concerns related to teaching and learning arose, not surprisingly, from the secondary and postsecondary instructor networks. Two other categories that are actually components of teaching and learning were coded separately: integration of academic and occupational content and relevancy of programs to the needs of the workforce. These three categories, in total, were coded more frequently than any other content area. If partnerships, as a means of ensuring relevancy, are added, this is by far the dominant category as measured by amount of discussion, but it is not a major concern across all sources.

Clearinghouse: What everyone would like is one location, a web site, that is easily searched and contains in a succinct, easily accessible format all the best information anyone would want to know about CTE.

Instructors/Administrators: State-level staff typically spoke of instructors in terms of the difficulty of finding individuals with the necessary technical qualifications to teach classes. Many secondary representatives expressed an interest in how other states are dealing with alternative certification. Some participants noted that it is even more difficult to find qualified CTE administrators than it is to find instructors. Three themes dominated the discussion among teacher educators: recruitment into preservice programs, induction and retention of new teachers, and alternative certification procedures.

Professional development: This occurred frequently among the teacher educators, secondary state-level representatives, and tribal/racial/ethnic networks. Like exemplary practices and clearinghouse, professional development was mentioned with reference to many different content areas.

Technology, distance education: Most of these comments noted the need to prepare instructors to use information technology (web pages, threaded discussions, e-mail, Internet sites, etc.) to enhance instruction in the classroom and to deliver CTE courses through distance education. There was some discussion of proprietary information technology certification.

Assessment: Almost all the comments related to the most effective way to measure the performance/learning of both academic and technical skills. Some participants asked about the utility of national tests.

Implications of the Workforce Investment Act of 1998: This Act became effective July 1, 2000 and made many changes in eligibility, accountability, and funding for skill training. It could have impact far beyond the students served under WIA.

Skill shortages, basic skills: The employer representatives in the business/ union/association networks consistently cited the difficulties of finding workers with appropriate skills as their major problem. Some employers also noted low basic skill levels, especially in mathematics.

Multiple problems of constituents: Participants in three of the four conference calls with tribal/racial/ethnic networks spoke of the multiple problems that many of their constituents face. Before addressing skill-training needs, students represented by these stakeholders must deal with problems of bureaucracy and daily living, including in some cases, learning English.

The current agenda of the National Centers addresses many of the needs that were identified, but there are dimensions of all of them that are not being examined. Resource constraints will prevent the National Centers from conducting all that should be done. It is the hope of those involved with the needs sensing that these results will prove useful to all of the field as decisions are made concerning the type of research, dissemination, and professional development activities that should be conducted.

CHAPTER 1: PURPOSE AND METHODS

The National Research Center and the National Dissemination Center for Career and Technical Education are committed to responding to the needs of the field in planning, conducting, and evaluating all research, dissemination, and professional development activities. To fulfill this commitment, the Centers are assembling and analyzing, on an ongoing basis, information on the needs of instructors, administrators and policy makers as well as on events and trends in the environment in which Career and Technical Education (CTE) operates that shape these needs. The information produced is used to guide planning for future activities.

Information is assembled from the internal operations of the Centers and from external sources. Internal sources include the Advisory Council of the Centers, the Question and Answer Service, and topics posted to the CAREERTECH listserv moderated by the Centers. The major external sources are need sensing/environmental scanning networks that the Consortium universities have established in each of the states in their regions. These networks have required extensive effort to develop.

This report presents the results from the conference calls conducted with the networks and other need-sensing activities completed in calendar year 2000. The report first presents information on the conduct of the calls, including a summary of the number completed by region and by network and the number of participants. It then presents the major findings across all networks and other sources of information. For the most part, there was a good deal of similarity in the kinds of needs reported by the seven networks, but some differences emerged and these are noted.

It should be noted, that the activities described represent need sensing, not needs assessment. Several methods can be used to conduct needs assessment, but they all attempt to identify discrepancies or gaps:

> . . . between "what is," or the present state of affairs in regard to the group and situation of interest, and "what should be," or a desired state of affairs. (Witkin and Altschuld 1995, p. 4).

The goal of the need sensing presented in this report is more modest: To identify those concerns or issues that are most pressing or cogent to various groups involved in CTE. To be more specific, the need sensing in this report focuses primarily on those concerns within CTE that may be amenable to intervention through research, dissemination, and professional development. These are the primary functions of the National Centers, and the need sensing was designed to develop information that can be used to guide the planning for the programs of work of the two Centers.

Data Sources

The primary sources of need sensing data, and certainly those that required the most effort, were the regional networks. This section describes the methods used to develop these networks and summarizes the other kinds of data that were assembled.

Networks

The first step in developing the networks was to divide the nation into five regions. Within each of these regions, one of the universities in the National Centers' consortium assumed the responsibility to develop the networks. The assignment of the states to regions was driven by geographic contiguity. The university responsible for a region had to be located in one of the states in that region and the others states had to share at least one border.

Regions Assigned to Consortium Partners:

- Region 1, The Pennsylvania State University: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia

- Region 2, The Ohio State University: Alabama, Florida, Georgia, Kentucky, Mississippi, Ohio, South Carolina, Tennessee, West Virginia, Puerto Rico, Virgin Islands

- Region 3, University of Illinois: Arkansas, Illinois, Indiana, Louisiana, Michigan, Missouri, Oklahoma, Texas, Wisconsin

- Region 4, University of Minnesota: Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, New Mexico, North Dakota, South Dakota, Wyoming

- Region 5, Oregon State University: Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah, Washington

The following seven networks are in various stages of development in each of these five regions. The original goal was for each network to have one representative from each state in a region. During the first year of the project, that goal was not reached for any of the networks.

- State-level liaisons appointed by the state directors for CTE
- State-level liaisons appointed by the state directors for community colleges
- Representatives of professional and business/industry associations with an interest in CTE, including labor unions
- Faculty representatives of colleges and universities preparing CTE teachers
- Instructors from school districts that offer CTE programs
- Instructors from postsecondary institutions that offer CTE programs
- Representatives of Native American nations and associations of significant racial/ethnic groups

The Site Director for each of the partner institutions is responsible for establishing these networks. He or she is assisted by a staff person who is assigned quarter-time to serve as field liaison. The duties of the liaisons are to assist in establishing the networks, to schedule conference calls with members of the networks, and to prepare reports that summarize the major issues discussed during the conference calls. In some of the regions the filed liaisons facilitate the conference calls; in others, the site directors perform this function.

To establish the networks, the initial contacts in each state were with the state directors of CTE (as listed on the website: www.iris.org/~nasdvtec) and the state directors of community colleges (as listed on the website: www.statedirectors. org/index.html). We considered it essential to inform the directors about the activities we were planning before we began contacting stakeholder groups within their states. Once the state directors had appointed their liaisons, and a few declined to do so, these director representatives were asked to nominate participants for the other five networks in their states.

In some states the nomination procedure was successful, even though it typically took several weeks to obtain names. Some states offered few suggestions and leads had to be developed by other means, such as searching websites, and contacting schools and organizations directly,

Once the nominees agreed to participate in the networks, the conference calls proved difficult to schedule. When times suitable for all were identified and the calls scheduled, typically some of those who had agreed to take part were not available. The most extreme example of the difficulties encountered was a conference call that was aborted shortly after it started because of a tornado warning at the site of the convener.

Despite the difficulties encountered, the site directors and field liaison staff report that those who took part in the conference calls seem to find them to be useful and informative. Table 1 presents a summary of the calls conducted and the number of participants by region and network.

No format was specified for the reporting of the conference calls with representatives of secondary and postsecondary directors. Consequently, these reports were quite diverse summaries of the primary topics discussed. For the reports from the other networks, a format was developed. The field liaisons were asked to summarize the remarks of each of the participants, in the order in which the comments were made, and to identify the speakers. They were also asked to provide an overall summary of the main topics discussed. The summaries of the participant comments from the regional reports were entered into software specifically designed for the analysis of qualitative data (Seidel 1998) and coded. Appendix A describes the methods used to analyze the regional reports.

The coordinator of the need sensing also asked to be included as a nonparticipant observer (more literally, a listener) in the conference calls. Participating in the calls gave him a sense of the overall tone of the discussions and provided context as he developed the synthesis across regions and sources.

WebBoard test. In addition to conducting conference calls, the University of Illinois tested the feasibility of using WebBoard software (webboard.oreilly.com) for obtaining information from its seven networks. WebBoard is a proprietary program for facilitating nonsynchronous, or *threaded*, discussion. Individuals who wish to participate can log-on at any time to view comments that have been posted by others and to add their own thoughts and reactions.

Table 1.

Number of Participants in Conference Calls Conducted in 2000

Networks	Regions					Total
	Pennsylvania State	Ohio State	Illinois	Minnesota	Oregon State	
State-level secondary	5	9[a]	7[b]	7	4	32
State-level postsecondary	5	9[a]	8[b]	10	4	36
Business/Unions/Assoc.	2	7[a]	2	5		16
Teacher educators	4		4	9		17
Instructors, secondary	4	3	4[b]	8		19
Instructors, postsecondary		4	3[b]	5		12
Tribal/racial/ethnic	3	6	5	3		17
Total	23	38	33	47	8	149

Note:
[a] Two conference calls were conducted, one in the spring and the second in the fall.
[b] Participated in a combined secondary-postsecondary call, except for 3 in a separate postsecondary state-level call.

The three general questions about major needs regarding dissemination, research and professional development that were used in the conference calls were posted and all participants in the University of Illinois networks were invited to comment. Out of a total of 55 individuals in the 7 networks, 10 posted comments. Appendix B presents a summary of the comments that were posted during a one-month period from October 16 to November 17.

Participation was less than desired, but the timing of the test may have reduced the number contributing. Some who visited the site commented that they had recently discussed the same questions during conference calls and saw no need to add to what they had said. The number who contributed in this test is considered too low to use this approach as an alternative to scheduled conference calls. The Site Director at the University of Illinois, would, however, like to test the approach again when there has been a longer interval after contacting the participants in conference calls. After a longer period, or with different questions, network members may be more inclined to participate.

Other Sources

As noted earlier, the need sensing also draws upon other sources internal and external to the center including the Advisory Council and some of the services offered by the Dissemination Center. These are briefly described.

Advisory Council. At the first meeting of the National Centers' Advisory Council (April 12, 2000) small group sessions were conducted during which the Council members were asked their perceptions of the major needs and concerns relative to four topics:

- Improving Learning Outcomes for All Students
- Knowledge, Attitudes and Skills Needed by Teachers
- Dissemination
- Technical Assistance

The main points raised in these discussions were recorded on flip charts and transcribed verbatim. A summary of the main themes was prepared and circulated to the Council for review and comment.

Question and Answer. One of the services that the National Dissemination Center provides to the field is the Question and Answer (Q & A) project. Anyone can contact the Center and ask any question relative to CTE, and the project director, Ms. Judy Wagner, attempts to find the answer or refer the question to someone who may be able to help. Ms. Wagner maintains a list of the topical areas addressed by these inquiries. Appendix C presents the list for calendar year 2000.

CAREERTECH. Another of the Dissemination Center's services is a moderated listserv open to anyone who wishes to subscribe. It is moderated at the request of the subscribers. Initially it was not moderated, but subscribers received so many messages in which they had no interest that they asked that it be moderated.

The number of messages posted to the listserv is not large, but occasionally a topic arises that generates considerable discussion. When such a dialog begins, the need sensing coordinator sets up files in which to save the posting. These represent another source of need sensing data.

Publications. From time to time, documents are published that appear to have strong direct implications for CTE or broader implications for the environment in which CTE operates. *High Schools of the Millennium* (American Youth Policy Forum 2000) is a good example of one with direct implications, and *Futurework: Trends and Challenges for Work in the 21st Century* (U.S. Department of Labor 1999) is a good example of one with broader implications.

The need sensing coordinator, through his general professional reading, attempts to identify and assemble such documents and to use them for background and context as he analyzed other sources.

In the next section, the results of the need sensing on which there was the most consensus are presented. The discussion represents a synthesis across the separate sources, with heaviest reliance upon the reports from the regional networks. The primary foci are those issues and concerns that most sources mentioned the most often.

CHAPTER 2: RESULTS

In the review of the results from the networks, the Advisory Council, and the CAREERTECH postings, three needs, or concerns, occurred most frequently: the image of CTE, exemplary practices, and partnerships. Within these categories, different aspects were emphasized. This section first discusses the varying emphases within these categories and then turns to those needs that were of particular concern to some groups but not to others. It concludes with those needs that were mentioned frequently but only in one network. (*Frequently* is defined by the number of times a topic was coded and the total number of lines of text that were coded as referring to the topic in the reports of the conference calls in the five regions. See Appendix A for a fuller discussion of the methods used in the analysis.)

Needs Emerging from Most Sources

Image of CTE

The image of CTE among students, parents, teachers, counselors, and administrators was a recurring concern across all sources. The underlying theme was the need to change the perception that CTE offers an inferior curriculum, appropriate only for those students who cannot meet the demands of a college preparatory program. Here are some examples:

> Counselors and parents still want students to get four-year college degrees, but that doesn't make sense for many students. Most technical jobs pay more than teachers make.
>
> Young people are embarrassed to be attending two-year colleges, but they shouldn't be.
>
> The weakness is that some administrators and teachers don't commit to the concept [of career preparation in high school] and that carries over to the students very quickly. Seems as if our schools are still focusing on the college-prep curriculum and not giving any time to career preparation.
>
> It is a common practice that, all too often, counselors and school administrators view career-technical education as a "dumping ground" for problem or low achieving students, especially minorities. Something needs to be done to change this image and perception.
>
> How can we make the public listen/hear and believe the value of CTE?

The employer participants in the business/union/association networks were among the most vocal on this issue. Some spoke of attempts they had made through career days at high schools to interest students in preparing for careers in their industries. The employers reported that students in whom they had created an interest often were discouraged from enrolling in CTE courses when they talked with their high school counselors.

Many participants, especially state-level secondary representatives and secondary instructors, spoke of the need to market a new image that more accurately reflects the content of today's CTE courses. Here are some of the dissemination activities that they recommended:

- Publicize information on how CTE today is different than the "woodworking/ dressmaking" that most adults remember from their high school years. The work place is changing and higher skill levels are needed (*e.g.* applications of statistics in quality control).
- Identify and publicize success stories, such as profiles of CTE graduates in well-paying careers where they use the skills they studied.
- Identify and disseminate credible information that demonstrates CTE contributions to learning and earning.
- Identify three or four clearly stated themes that adequately define/describe CTE. Market the same message at national, state, and local levels; explain why CTE is so important to the world economy.

Some respondents noted that marketing CTE is especially needed because of the decision by the American Vocational Association to drop *vocational* from the name of the field. In their view, the change has increased the uncertainty about just what is taught in CTE programs. A member of a tribal/racial/ethnic network, however, applauded the new name saying it has already ". . . changed the mindset of many people. CTE means much more than vocational education. Our constituents are beginning to realize that this is a viable tool for achieving their goals."

Another indicator of the importance of the image issue to the field was the extended discussion it stimulated on the National Centers' listserv, CAREERTECH. In early February 2000, shortly after the listserv had been announced, the director of the Information Synthesis Products project, Dr. Susan Imel, posted a message asking for suggestions of topics to be examined in the publications that her project was to produce. The response to this request evolved into a prolonged discussion (continuing for two weeks) of society's emphasis on the four-year degree as the preferred route to a rewarding career. There were far more postings about this topic than for any other message or request that appeared on the listserv in the past year. The need for broader career awareness and preparation for all students, as well as the differences among students in their interests and learning styles, were the dominant themes. Exhibit 1 presents two examples, and Appendix D presents a more extensive sample of 13 posting from this discussion

Exemplary Practices

Identifying and disseminating information about exemplary, or best, practices, was mentioned in many different contexts in all groups except postsecondary instructors. The comments reflect a general sense that there are many successful programs and that information about them should be documented and widely disseminated. Here by source are the different content areas about which information on best practices was requested:

Advisory Council: Delivery of CTE at the secondary level by characteristics of the school (urban-rural, etc.); whole school reform; career academies; models for integrating academic and technical instruction.

State-Level Secondary: Practices resulting from School-to-Work; preparation of CTE teachers and administrators, establishing business-education partnerships; obtaining and keeping instructional equipment current; modular-based open-entry, open-exit programs; data collection and performance measures, using data for program improvement.

State-Level Postsecondary: Models of secondary-postsecondary collaboration in program delivery, shared facilities, combined classes; transition from secondary to postsecondary and associate degree to bachelors; competency-based education; basic skills remediation; integration of academic and technical instruction.

Business/Unions/Associations: Structure, reporting, and funding of successful CTE delivery systems, *e.g.*, magnet schools; establishing business-education partnerships; getting teachers and students involved in the reality of work.

Teacher Educators: Methods to ensure the relevancy of instructional programs; linking with business, legislatures, communities; supporting/mentoring teachers; integration of academic and technical instruction; team teaching; authentic assessment, including case studies.

Secondary Instructors: Establishing business-education partnerships; multiple intelligences, preferred learning styles of students; use of advisory committees

Tribal/Racial/Ethnic: Models of integrating business and industry standards into CTE program; certification and assessment strategies; school designs that meet employer needs; identifying and responding to the needs of minorities and women.

Partnerships

The references to partnerships were much more focused than those regarding exemplary practices, and they came most frequently from the business/ industry/labor and secondary instructor networks. Almost all of these comments referred to the need to develop partnerships as a means of keeping programs relevant and aligned with the needs of employers. Four of the 10 coded references to partnerships from secondary instructors spoke directly to the use of advisory committees to guide programs.

When members of the Advisory Council spoke of partners, however, their typical referents were organizations, associations, and agencies concerned with preparation for the workforce. There was a consensus that the resources of the National Centers are so few in comparison to the needs for research, dissemination, and professional development the only way to have impact is

Exhibit 1

Samples of Posting from CAREERTECH Discussion of Image of CTE

In light of all our ideals, our workforce is made up of MILLIONS of workers of all abilities, in all capacities. Somehow with the recent development of technology we seem to have gotten off track. Are we taking the NEED for a higher level of education to extremes?

It is true that many (and more and more) jobs are requiring more advanced skills as technology advances, but we still must provide skilled workers for areas where the implementation of technological advances is not as great and probably will not have as great an impact in the future. Case in point, and an example, is the building industry, which at present is in the midst of its greatest boom ever with an immediate demand for tradesmen that cannot be satisfied. Training for many construction related occupations DOES NOT require a college, or even junior college, education. I have not yet seen a computerized hammer, circular saw, or tape measure. Many tradesmen have received training at the secondary level and have gone on to be very successful, satisfied in their area of work, earning a "decent living", and to living a comfortable life style. And this continues, and will continue to be possible in the future.
Greg Foote, Vocational Instructor, Lely High School Construction Academy, Naples, Florida

It has been interesting watching this subject develop. I am a journeyman ironworker, have been certified to teach adult education, and spent three years teaching apprentice construction trades. Prior to becoming self-employed as a facilities consultant, and after my ironwork career, I spent nine years as a director of maintenance and operations and a K-12 school district. We had a school-to-work program administered by the curriculum director. I repeatedly offered to provide seminars for juniors and seniors to introduce them to the possibilities of outside construction trades as a career. My offers were ignored. The only time I heard from the school district was when I took the initiative to provide the seminars independently and on my own. They objected and tried to prevent me from giving the seminars. I prevailed and the student response was very positive. Many of the students had no idea of the opportunities that were out there in the construction trades.

The school to work program seemed to be very narrow in focus. The only thing I saw them doing was providing unskilled labor at local printing concerns. I think there's a long way to go before our public schools aggressively propose the opportunities available through training in skilled trades.

Bert Bitter, Unitarian Church Administrator

through linkage and cooperation with others with similar concerns. Those with whom linkage was recommended included the following:

- Association for Career and Technical Education
- American Association of Community Colleges
- National Educational Association
- American Federation of Teachers
- Education Commission of the States
- National Governors' Association,
- National Conference of State Legislatures
- National Skill Standards Board
- Office of Educational Research and Improvement, U.S. Department of Education
- Employment and Training Administration, U.S. Department of Labor
- High Schools That Work, Southern Regional Education Board.

Needs Focused in Specific Sources

The discussion now turns from the needs that were identified across several sources to those that were more focused in specific networks.

Teaching-Learning (Integration, Relevancy)

Many concerns related to teaching and learning arose, not surprisingly, from the secondary and postsecondary instructor networks. Two other categories that are actually components of teaching and learning were coded separately: integration of academic and occupational content and relevancy of programs to the needs of the workforce. These three categories, in total, were coded more frequently than any other content area, but were concentrated in the instructor networks. Here are samples of the kinds of comments that were coded teaching-learning:

- Emerging methodologies and learning styles
- What methodology is the best to use given the whole range of learning styles in one's classroom?
- CTE needs to have teachers teach "high expectations" and equip them with broad-spectrum learning with challenges to meet all needs of the curriculum. Classroom management ideas during actual student contact. Techniques to make learning fun.
- Training on multiple intelligences, techniques for developing new study skills and information for teachers on how to teach students to learn more on their own, especially under 90-minute block schedules.
- Good basic teaching methods for people who came out of industry with a lot of experience but no pedagogy skills.

These are the kinds of comments that were coded integration:

- Integration of academic and vocational education—continue to sustain funding and resources for collaboration between teachers.
- The new frontier for integration is connecting to content standards. What are other states doing to integrate curriculum and meet standards?

- What do we really know about contextual learning? We rely on anecdotal case studies too much. Integration is important but we've become splintered. There are too many initiatives and university CTE departments are becoming fragmented.
- What tips/models/strategies are there to implement academic integration?

Relevance was a major concern not only to instructors, but also to participants from the tribal/racial/ethnic networks. The need to keep programs current with the requirements of the labor market was cited in several different ways. Some spoke of the difficulties of upgrading equipment and facilities. Others wanted models for integrating business/industry standards into curriculum so that they contribute to economic development and meet localized demands. For others it was a matter of keeping faculty current through shadowing or other externship experiences. Relevance was also mentioned in terms of career development: Are the skills taught in CTE contributing to career development? The final reference was as a way of increasing motivation of students.

Most of the comments about relevance paralleled the concerns of the partnership category. Comments that specifically mentioned working with employers as the means of ensuring relevance, were coded *partnership*. Those that spoke of the need to keep programs up-to-date or aligned with labor force needs were coded Relevance.

The comments of the teacher educators relative to teaching-learning called for more research on what really makes a difference in student outcomes. Do students learn more if their teachers have master's degrees or their trade and industry instructors have bachelor's degrees? Is there relationship between test scores and performance on the job? How can the effectiveness of preservice and inservice programs be evaluated? Does workplace learning improve student performance, and if so, how can its contribution be measured?

Clearinghouse

A need for a clearinghouse received support from most of the sources. The following quote captures the recurrent theme in many of the comments:

> There is a lot of good stuff out there. We need a web site where we can go and find out what works. It should be easy to search. Teachers don't have the time to do extensive searches. The information should be brief, to the point and avoid research jargon.

What everyone would like is one location, a web site, that is easily searched and contains in a succinct, easily accessible format all the best information anyone would want to know about CTE. This information would include:

- Academic and occupational skill standards from national sources, such as the National Skill Standards Board and from states that have established them
- Curriculum that could be easily downloaded and used in classes
- Teacher certification practices, including alternative certification, across the states
- Information, including evaluations, about the various private certification programs in information technology such as A+ (www.comptia.org/certification), Microsoft Certified Systems Engineer (www.microsoft.com/ trainingandservices), and Cisco (www.ieng.com/warp/public/10/ wwtraining/certprog).

- How state and local educational agencies are using resources such as WorkKeys (www.act.org/workkeys) and V-TECS (www.mindspring.com/~vtecs).

Instructors/Administrators

Comments relative to instructors were frequent among the state-level representatives, both secondary and postsecondary, and as might be expected, dominated the discussion among teacher educators. When the state-level staff spoke of instructors it was usually in terms of the difficulty of finding individuals with the necessary technical qualifications to teach classes. Many secondary representatives expressed an interest in how other states are dealing with alternative certification. Some participants noted that it is even more difficult to find qualified CTE administrators than it is to find instructors.

Three themes dominated the discussion among teacher educators: recruitment into preservice programs, induction and retention of new teachers, and alternative certification procedures. Preservice programs were reported as shrinking or being eliminated in many universities, primarily because students are not choosing them. High turnover among new teachers was also reported. There was a perception that new CTE teachers are often "on-their-own" receiving little support from administration and their academic colleagues. Those who enter directly from industry are sometimes seen as not "professional" because they lack degrees.

Some of the network participants spoke of their own feelings of isolation as the only CTE teacher educator on their campus, or in one case, in an entire state. The representative from South Dakota described his state's professional development plans for new teachers that include mentoring to increase retention. The Iowa representative said the preservice program at his university develops learning communities at the undergraduate level that continue as geographically dispersed support groups through the first few years of teaching. Several of the teacher educators requested information about what is "out there" with regard to alternative certification, and some described the procedures in their states.

Professional Development

Professional development was coded frequently among the teacher educators, secondary state-level representatives, and tribal/racial/ethnic networks. Like exemplary practices and clearinghouse, professional development was mentioned with reference to many different needs. The teacher educators requested and exchanged information about how professional development is conducted, both preservice and inservice. Some asked if the field really know the skills that are needed to become a good teacher. Higher academic requirements were cited in some states that seem to be moving toward requiring a bachelor's degree for all CTE teachers. State-level secondary representatives cited many of the topics that are listed under Exemplary Practices as areas in which professional development is needed. For example: integration of academic and technical instruction, incorporating academic and industry standards in curriculum, effective use of technology in instruction, and dealing with diversity. Participants in the tribal/racial/ethnic networks spoke of the need for more professional development for their staff in these same topics.

Technology, Distance Education

References to technology, especially on-line delivery of instruction and distance education, were frequent among instructors, state-level postsecondary representatives, and tribal/racial/ethnic networks. Most of these comments noted the need to prepare instructors to use information technology (web pages, threaded discussions, e-mail, Internet sites, etc.) to enhance instruction in the classroom and to deliver CTE courses through distance education. Uncertainty with regard to the responsibility for proprietary systems, such as A+ and Cisco, was mentioned. Questions were also raised about teaching loads in distance education: what amount of contact equals a full-time equivalent student?

Assessment

Comments about assessment were fairly frequent from instructors and state-level representatives at both the secondary and postsecondary levels. Almost all the comments related to the most effective way to measure the performance/learning of both academic and technical skills. Some participants asked about the utility of national tests such as WorkKeys from ACT and the tests available from V-TECS and the National Occupational Competency Testing Institute (www.nocti.org). Others asked about alternative assessment methods, including portfolios.

Implications of the Workforce Investment Act

The Advisory Council and the state-level postsecondary networks requested information about the implications of the Workforce Investment Act (WIA) of 1998. This Act became effective July 1, 2000 and made many changes in eligibility criteria and funding for skill training.

Questions were raised about how the accountability requirements under WIA interact with those established by the Perkins vocational education legislation. How will state and local workforce investment boards establish standards for the performance indicators required by the WIA, and how will these standards be used to certify training programs? How can comparable standards be established for programs that vary greatly in length? The performance indicators mandated for training programs must include all students, not just those receiving WIA funding, and the results must be available for review by individuals seeking training. These provisions could have impact far beyond the students served under WIA.

Other Needs

The following needs were of particular concern to participants in one network, but mentioned rarely by others.

> *Skill shortages, basic skills.* The employer representatives in the business/ union/association networks consistently cited the difficulties of finding workers with appropriate skills as their major problem. This was the first need mentioned in three of the four regions that conducted conference calls with these networks, and all participants in these networks endorsed it.

Employers in two regions also mentioned basic skills, the 3 Rs. Mathematics, especially as it applies to the building trades and electricity, and writing skills were specifically cited.

Multiple problems of constituents. Participants in three of the four conference calls with tribal/racial/ethnic networks spoke of the multiple problems that many of their constituents face. Before addressing skill-training needs, the students represented by these stakeholders must learn how to deal with the bureaucracy of the institutions they attend. They must be able to set goals and to manage their time and resources to achieve these goals. Often they must acquire these skills, while attempting to arrange for transportation and day care, and in some cases, learn English. A broad range of easily accessible support services are needed if these students are to succeed.

CHAPTER 3: IMPLICATIONS

The need sensing presented in this report was conducted to develop information to guide the planning and activities of the National Centers. The results were used in planning for Year 2. Ongoing contact with the field and monitoring of internal sources will continue during Year 2 to supplement these results and inform planning for subsequent years. During the year 2000, which was Year 1 of the contracts for the two new National Centers, their programs of work were essentially set by the proposals that they had submitted in response to the request for proposals issue by the Office of Vocational and Adult Education. The most direct application of the need sensing results during Year 1 was in the selection of topics that could be addressed by the *In Brief* and *Highlight Zone* publications produced by the Information Synthesis project.

Fortunately, the need sensing that had been conducted as part of the proposal preparation identified many of the same concerns as the more comprehensive effort presented in this report. Several of the projects conducted during Year 1 address aspects of the needs discussed in this report. In the Dissemination Center, the project Sharing and Celebrating Exemplary and Promising Programs responds to the need labeled *exemplary practices*. During Year 1, this project solicited and reviewed nominations for exemplary programs. Those programs that met the criteria were announced early in April 2001 and methods of disseminating information about them are being developed. Additional nominations will be solicited and reviewed in Year 2

The project Repository for Standards began during Year 1 to develop an electronic database focusing on statewide occupational skill standards, state adjusted levels of performance, and statewide accountability indicators. Contact was made with all states to determine the information they have available and the database for filing and accessing this information was constructed. In February 2001, this information was added to the National Centers' web site and made available for public access. This is one step toward filling the needs coded *clearinghouse*.

Comments relative to the need to develop and maintain close relationships with employers were coded *partnerships*, and this emerged as the third most widespread need. Many of these comments could also have been coded relevancy for that is the goal that most of the comments implied. Partnerships with employers are seen by many of the network participants as the key to ensuring that programs are aligned with the needs of the workforce. If the comments that were coded *partnership* are combined with those coded *teaching-learning, integration*, and *relevancy*, a broad overarching theme emerges that can be summarized as follows: Concerns about the best ways to teach while ensuring that what is taught is responsive to the needs of employers.

Three of the projects of the Research Center directly address this theme:

- An Examination of Four Curriculum Integration Models
- New Designs for Career and Technical Education at the Secondary and Postsecondary Levels
- What Makes it Work: Examining Successful Career and Technical Education Efforts in Schools and Community Colleges Engaged in Educational or Whole-School Reforms

Three other projects, although not directly focused on the image issue, will provide information on whether CTE makes a unique contribution to learning and earning:

- Career Development Interventions and their Relation to Academic Achievement in Grades 7-12
- Community College and Beyond: A Longitudinal Analysis of Postsecondary Education and Employment Outcomes for Tech-Prep Participants and Non-Participants
- Transitioning Through Schooling and Into the Labor Force: Analyses of Nationally Representative Longitudinal Data

Two other projects address the concerns about instructors/professional development and technology:

- Totally Engaged in Preservice Development: From Data to New Designs
- Participating in Using Internet-Related Technology in Schools: Patterns, Opportunities, and Barriers

The Research Center is conducting three new projects in Year 2 that arose from the results of the need sensing. The first is designed to provide additional information on the unique contributions of CTE. This study is using data from ongoing longitudinal studies to examine the impact of participating in school-to-work activities and new models of CTE on secondary and postsecondary student achievement, patterns of transition to postsecondary education and the labor market, and acquisition of credentials.

The second new research project addresses the proliferation of alternative, proprietary certification (*e.g.* A+, Microsoft) in information technology (IT). This topic arose in discussions about the need for a clearinghouse and for more information on technology/distance education. Both the demand side, as reflected by human resource managers, and the supply side, as reflected by IT employees, will be studied to gain an understanding of the use and value of alternative certificates in recruitment and job seeking.

The third new initiative of the Research Center is a nationwide study of alternative certification procedures for CTE instructors. The study will compare newly hired teachers who are traditionally or alternatively certified with regard to their induction into teaching, professional development needs, and attrition. This study will provide information that was requested relative to the shortage of instructors and professional development needs of teachers.

The major new initiative of the Dissemination Center for Year 2, the Professional Development Academy, responds to needs for leadership training for administrators and for making research results more accessible to practitioners. The Academy Leadership Institute will offer a yearlong program designed to enhance the skills of CTE administrators. Applicants are being recruited across the country to participate in learning experiences that will involve four face-to-face meetings and biweekly virtual meetings via the Internet.

To make research more useful, a series of five regional conferences are planned. These conferences will create opportunities for administrators, instructors, and policy makers to meet with researchers to discuss how findings can be used for program improvement. Researchers

will serve as resources to local planning teams and be available for ongoing consultation after the conferences as the plans are implemented.

The focus in the Academy Leadership Institute on administrators reflects the difficult choices required in planning for the National Center. Professional development is needed for both instructors and administrators, but the judgment was made that the Dissemination Center has the potential to achieve a wider impact by focusing on administrators. From among the many needs that have been identified, the National Centers must select those that are both critical to the field and amenable to the kinds of interventions that can be brought to bear. The information assembled through need sensing must be evaluated in terms of the scope, urgency and persistence of the needs and the potential impact that the National Centers could have upon them.

Another response to the needs in professional developed is a set of five papers the Dissemination Center has commissioned to be prepared on teacher education for CTE. Each of the partner institutions has responsibility for one of these papers. These papers will provide the background for a conference that will be held in Year 3

While the current agenda of the two National Centers touch on many of the needs that have been identified, there are dimensions of all of them that are not being examined. Resource constraints will prevent the National Centers from conducting all that should be done. It is the hope of those involved with the need sensing that results this activity has produced will prove useful to all of the field as decisions are made concerning the type of research, dissemination, and professional development activities that should be conducted.

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APPENDIX A: METHODS USED TO ANALYZE REGIONAL REPORTS

Analysis of qualitative data can takes many forms. We have relied primarily on the number of times specified topics were mentioned and the extent of discussion of the topics, as reflected in the number of lines of text in the regional reports. These are, of course, only rough proxies of importance, but they provide standard metrics that can be compared across regions and networks. The synthesis presented in this report focused on those topics that were most frequently mentioned and received the most lines of text.

No format was specified for the reporting of the first round of conference calls with representatives of secondary and postsecondary directors. Consequently, the reports were quite diverse and consisted of summaries of the primary topics discussed. For the reporting of other networks, a format that would yield more standardized information was developed. The field liaisons were asked to summarize the remarks of each of the participants, in the order in which the comments were made, and to identify the speakers. They were also asked to provide an overall summary of the main topics discussed. The summaries of the participant comments from the regional reports were entered into software specifically designed for the analysis of qualitative data, Ethnograph (Seidel 1998), and coded.

The coordinator of the need sensing also asked to be included as a nonparticipant observer (more literally, a listener) in the conference calls. Listening to the calls gave him a fuller sense of the overall tone of the discussions that facilitated the analysis and preparation of the synthesis of the regional reports.

Codes were developed and assigned to text to capture the main topics discussed. The codes that occurred most often were reported in the Results section of this report. Appendix Table A-1 presents a tally of the number of times each of these codes was assigned in the regional reports.

Once the text was coded, it was searched by network for code words and the segments to which these codes were assigned. For the instructor networks, for example, four reports with a total of 492 lines of text were available at the secondary level. (Oregon State did not complete a conference call with this network.) Appendix Exhibit A-1 shows the segments coded *Teaching* from the secondary reports for the regions. The exhibit is taken directly from the Ethnograph output.

The lines of text were tallied by the codes assigned to the lines. By this measure, teaching methods, pedagogy, were the main concern of both secondary and postsecondary instructors. This category included contextualized learning, the integration of academic and technical content, relevancy, dealing with diversity, and incorporating academic and technical standards. A little over one-third (35%) of the secondary reports involved teaching compared to a little less than one-fourth (22%) of the postsecondary text.

Appendix Table A-1

Codes Used for Analysis of Regional Reports by Network

Codes	State-Level		Business/ Unions	Instructors		Teacher Educator	Tribal/ Racial
	Sec	Post		Sec	Post		
Image of CTE	8	6	15	19	4	6	7
Exemplary	6	4	5	4	-	2	8
Partnerships	4	4	14	10	1	2	-
Teaching	5	2		8	5		4
Integration	9	6		12	2	2	
Relevancy	-	-	10	8	1	-	-
Clearinghouse	5	3	7	-	1	9	-
Instructors	9	3	-	2	3	25	-
Professional Development	10	3	-	-	-	14	12
Technology	5	17	-	10	8	-	5
Assessment	4	-	-	8	8	-	-
Implementation of WIA	-	2	-	-	-	-	-
Skill Shortages	-	-	7	-	-	-	-
Basic skills	-	-	6	-	-	-	-
Multiple Problems	-	-	-	-	-	-	7

The second ranking concern, as measured by lines of text, in the secondary reports was the image of CTE, 20 percent of the text. At the postsecondary level, it was technology, both using it effectively in instruction and keeping up-to-date with change, 17 percent of the text.

Similar analyses were conducted with the other codes from the other networks.

Appendix Exhibit A-1

Segments of Text from Regional Secondary Instructor Networks Coded Teaching

SEARCH RESULTS 1/30/01 2:58:12 PM Page 1
SEARCH CODE: TEACHING

#1 of 8 IL SEC Lack of or +Oklahoma Secondary CTE representative

SEARCH CODE: TEACHING

#-TEACHING

Lack of or opportunities for	39	-#	
professional development in areas of	40	#	
emerging methodology and learning	41	#	
styles--there seems to be a void;	42	#	
hard to locate that type of	43	#	
information.	44	-#	

#2 of 8 MN SEC A. STANDA

SEARCH CODE: TEACHING

#-TEACHING $-STANDARDS

A. STANDARDS-BASED EDUCATION. Need for	3	-#	-$
information from accreditation groups	4	#	|
regarding standards-based education.	5	#	-$
One helpful model is the "TRANSITIONS"	6M	#	
model for secondary education.	7	#	
TRANSITIONS is a pilot endorsement of	8	#	
the North Central Association that is	9	#	
student-driven, with individual	10	#	
information on entry and exit goals.	11	#	
It uses the "Cornerstone" standard,	12	#	
which focuses on writing, reading,	13	#	
science reasoning and math. (CO)	14	-#	

#3 of 8 OH SEC RB

SEARCH CODE: TEACHING

#-TEACHING

RB: Learning materials and assessment	3	-#	
strategies such as rubrics that convey	4	#	
information on consistent grading.	5	#	
$-RESOURCES			
Information about how to get funding	6	#	-$
for modern hands-on learning such as	7	#	|
multi-media and other teaching	8	#	-$

Appendix Exhibit A-1, Continued

$-ASSESSMENT
materials. Additionally, information 9 -# -$

#4 of 8 OH SEC MJ

SEARCH CODE: TEACHING

$-TEACHING
an adequate rubric, and strategies to 19 -# -$
incorporate multi-media and new 20 $
technology into a teacher's program. 21 -$

#5 of 8 OH SEC RR

SEARCH CODE: TEACHING

#-TEACHING
how to encourage technical 58 -#
writing/technical reading, and; 59 -#

#6 of 8 OH SEC RB

E: #-ADVOCACY

SEARCH CODE: TEACHING

$-TEACHING
organizations. CTE needs to have 70 -# -$
teachers teach "high expectations" and 71 $
equip them with broad spectrum 72 $
learning with challenges to meet all 73 $
needs of the curriculum. Classroom 74 $
management ideas during actual student 75 $
contact. Techniques to make learning 76 $
#-RELEVANCE
fun. Demonstration techniques of how 77 -# -$

#7 of 8 OH SEC MJ

SEARCH CODE: TEACHING

$-TEACHING
disadvantaged learners. Training on 88 -# -$
multiple intelligences. Techniques 89 $
for developing new study skills and 90 $
information for teachers on how to 91 $
teach students to learn more on their 92 $
own, especially under 90 minute block 93 $
#-TECHNOLOGY
schedules. Information/skills on 94 -# -$

Appendix Exhibit A-1, Continued

#8 of 8 OH SEC RR *

SEARCH CODE: TEACHING

#-TEACHING

RR: Multiple intelligences–is there a	112	-#
preferred learning style for students?	113	-#

APPENDIX B: REPORT OF TEST OF WEBBOARD CONDUCTED BY THE UNIVERSITY OF ILLINOIS

REGION 3 NETWORK – WebBoard Conference Call October 16th – November 17th, 2000

PARTICIPANTS:

State Secondary Liaisons
Missouri Dennis Harden, Vocational & Technical Education

State Postsecondary Liaisons
Wisconsin James Halloran, Wisconsin Technical College Board

Business & Industry Representatives
Illinois Eldon Stromberg, Communigraph, Inc.

Teacher Preparation Faculty
Louisiana Lori Myers, School of Human Ecology
Missouri Bob Stewart, University of Missouri-Columbia

Secondary CTE Instructors
Arkansas Annette Hays, Family & Consumer Science

Post Secondary CTE Instructors
Missouri Karen Owen, Business & Administrative Systems Program Coordinator
Illinois Tony Marucco, Lincoln Land Community College

Tribal, Ethnic, Racial Group Representatives
Illinois Carlos Azcoitia, Chicago Public Schools
Oklahoma Alberta Jones, Tulsa Technology Center

NCCTE: Zipura B. Matias
UIUC HRE: Craig Mueller

SUMMARY OF NEEDS BY STATE

Arkansas Needs:

- Need for counselors, general education teachers, and members of the general education department (state level) to understand the workplace workers technical skills needs (i.e. Information Technology).
- Change mentality in education circles that a 4-year degree isn't for everyone.
- Workforce educators and counselors must make students aware of the needs of the workforce and educational and salary opportunities available in technical fields.
- More partnering with business and industry through field trips, job shadowing, and internships for students to gain hands-on experience.
- Need for general education, workforce education, and business/industry to team up to best serve the needs of our students.
- Need for more partnerships like those mentioned directly below.

Arkansas Practices:

- Career orientation, workplace readiness classes, and other assorted workforce education classes.
- High school advisory groups shared by workforce education teachers (business and industry

representatives) to give insights on the needs of the community.
- Technology labs in several sites around the state utilizing "cutting-edge" software for designing projects ideas to implement in the community or schools. Teacher acts as facilitator in this process to ensure standards are upheld.

Illinois Needs:
- State-level policies to recognize the importance of career awareness, planning, and development of a student's education.
- State-level policies to allow secondary and postsecondary education to function as a continuum not as two distinct entities.
- Extinguish the public perception that CTE programs are "second tier."
- A need for students to obtain basic computer skills in high school.
- A need to provide instruction to catch adults up with their peers.
- A need for more flexible delivery processes to meet the needs of different students.
- A need for learning to become more convenient.
- Just-in-Time education? Must keep up with the industry.
- Need for teachers to gain industry experience.
- Administration and policy makers must encourage faculty to keep skills up to date by gaining industry experience and learning new techniques.
- Need for new hires that are highly trained and motivated with the skills to produce professional communication products and services.
- Provide strong academic and technical skills based on industry standards, work place skills, and an understanding of the need for life long learning.
- Need for technology literate individuals.
- Schools must emphasize that they are preparing students for academics and career success.
- Career exposure and technical know-how.

Illinois Practices:
- Developing a pre-testing technique to determine technology knowledge level of individuals
- Incorporating vendor/business programs into schools.
- Keeping in contact with ISBE/CTE planners, administrators, Career Center program delivery, CTE graduates to gain insightful information.
- Commitment from Chicago Public Schools to CTE to prepare students for secondary school and the workplace.
- Providing experiences and career opportunities to as many students as possible.
- Career academies and dual programs with post-secondary institutions.

Louisiana Needs:
- More information concerning funding sources for specific areas of CTE. (i.e. technology, agriscience)
- Assessment of current policies and strategies for teacher recruitment and alternate certification routes.
- Presently developed learning materials for teachers to cover the standards and benchmarks framework established for each area of CTE.
- Need to market CTE and better educate the public to smother the negative stereotype.
- Develop more articulation agreements with high schools, community colleges, and universities.

Missouri Needs:
- Authentic assessment strategies.
- Continued focus on "learning how to learn" with new technologies and methodologies.
- Understanding of the most effective teaching/learning strategies for all learning styles.
- Focus on critical thinking and practical reasoning.

- Research that shows how CTSOs are linked to students' improvement in academics, goal setting, and career development.
- Upgrade of technological skills and classroom management techniques for teachers.
- More focus on special needs children.
- Better understanding of academic and technical skills needed by the workforce.
- Full understanding of contextual learning.
- Understand what motivates CTE students and how it can be influenced.
- Inclusion of leadership skills in CTE.
- Integration of academic and vocational education.
- Cluster approach to provide a mix of technical areas that meet business and industry needs.
- Successful approaches and documentation of students' success in obtaining placement in high paying jobs.
- Keeping current with technological and work-place changes.
- Ability to design short term updates for retraining adults.
- Developing partnerships with business and industry to deliver in demand updates.
- Ability to efficiently develop articulation agreements on a 2+2+2 basis.
- Efficient accountability procedures to document program outcomes.
- Documentation of the academic content required for technical competence in post secondary programs and the balance between academic and technical content.
- Approaches of development of and assessment of the SCANS identified work place skills.

Oklahoma Needs:

- A change of thinking school officials, parents, and students have about CTE.

Wisconsin Needs:

- Facts on how many adults are looking for formal technical educational opportunities that can't find them, can't take advantage of those opportunities and for what reasons.
- Valid study to determine why students do not complete their technical education programs.

APPENDIX C: TOPICS OF INFORMATION REQUESTS RECEIVED BY THE QUESTION AND ANSWER SERVICE

[The following is taken from the annual report for this project prepared by the project director, Ms. Judy Wagner.]

During the first year of the contract, the Question and Answer Service (Q&A) responded to approximately 4,000 requests for information and materials. Approximately 100 searches of the ERIC database and the World Wide Web were done in response to questions. Over 8,500 copies of National Center publications were sent to clients in electronic or paper format. Information about available products and services was sent to approximately 10 listservs related to career and technical education.

Information was requested about a variety of topics including:

- What do people do to get better/higher-paying jobs
- Changing vocational school standards
- Videoconferencing
- America's Career Resources Network
- Career Academies
- Exchange programs
- Certification and credentials
- Programs that have had an impact on student achievement
- Year round schooling
- Leadership development
- Facilities design
- Trends in vocational education
- Areas of technology that need to be addressed
- Form of classes
- Charter schools
- Curriculum
- How to establish a technical school
- Judging FFA contests
- Impact of disabilities on employment
- Basic skills for special education students
- Vocational rehabilitation amendment
- Tech Prep
- Labor market projections
- Distance education
- Career assessment
- Programs for at-risk youth
- Employment opportunities
- Pre-employment skills testing
- Student achievement
- Vocational evaluation
- Alternative/portfolio assessment
- Assessment instruments
- Dropout prevention
- Strategic planning
- Career pathways
- Financial aid
- Standards
- School business relationship
- Music and vocational education
- Nontraditional careers for women
- Professional development

APPENDIX D: SAMPLES OF POSTINGS TO CAREERTECH DISCUSSION OF ROLE/IMAGE OF CAREER AND TECHNICAL EDUCATION

Would some facts help counselors and administrators (let's not forget the politicians) provide more and better choices for students? I say this because we are all brainwashed to some degree in believing a college education for "our" children is necessary. It is a hard if not impossible message to get out because it seems to go against the American Dream! Perhaps a true research report on what the labor market educational requirements for high tech, high wage is really like. This would be a good start for looking at where education needs to be to allow the U.S. to stay competitive. We hear the cry for all to go to college but are we saying a four-year degree is the only way to start and compete in these careers? Post-secondary education inherently means a four-year college degree to most people. There is no question life long learning is more important than ever but is it all a formal four-year degree higher education? (Posted February 10, 2000)
Patrick Keating, Director of Division of Workforce and Career Preparation, State of South Dakota.

I agree that vocational education is important. However I do believe that all students (if capable) should receive some sort of education after high school. I would not promote GED at 16, however I certainly do believe that some students will benefit from getting out of the high school community and into a community college at an earlier age. It seems that today's society is having more and more youth whose life circumstances don't allow them to reap the non-academic benefits (sense of belonging and socialization) of a high school. Their priority is survival and most often that means working to pay the bills. I could go on and on and on. (Posted February 10, 2000)
Mary Anita M. Kelly, Mathematics Teacher, New Berlin West High School, Wisconsin

Why should people who express their intelligence, emotion, personality (all right - their souls) with their hands be required to also be 'rigorously' literate, articulate, and so forth?

Answer 1: It makes them easier to administer.
Answer 2: It makes them easier to evaluate.

Here's an analogy: how important are the academic credentials of Irving Berlin, Oscar Peterson, or Frank Sinatra? I admit it's a stretch, but it illustrates the point I'm trying to make.

I am not arguing that conventionally challenging coursework shouldn't be there, just that the people whose skills lie in other areas shouldn't be required to jump through those hoops. You might as well insist on perfect pitch and good balance as well, for all the good it does. (Posted February 10, 2000).

What are the stats? Once upon a time I saw a statement that only about 30% of the people who entered public school finished university. That number is probably dated now. Can anyone

answer the following questions off the top of their head? Or suggest sources for authoritative studies?

What percentage of Public School starters finish Elementary school?
What percentage finish Secondary school?
What percentage start Post-Secondary school?
What percentage finish Post Secondary school?
What percentage of Post Secondary starters go to four year institutions?
What percentage go to two year institutions?
What percentage of the four year attendees graduate?
What percentage of the two year attendees graduate? (Posted February 10, 2000).
Gordon Bradshaw, Instructor Heavy Equipment Mechanics Co-op Pre-Employment Program, Yukon College, Whitehorse, YT, Canada

Actually, I was proposing that all students need to be prepared to go to college and the workforce upon leaving grade 12. This gives students options. Currently, too many students are marked either college prep (thus receive no prep for entering the workforce above really mundane, basic work) or vocational (thus receive no prep for entering college).

As for automatically going on to community college....not sure society is ready to pay the price for this. Also, at least in Ohio, we have been reasonably successful in getting many students ready for the real world in 12 years. I do support community college as a great place to expand on K-12 and we are working to make it a free option for all students. (Posted February 10, 2000)

Let's consider Dewey's original statement that if you apply learning to the real world integration will happen by default. I'm assuming we agree to this concept. If we do, then we can't put career education and academic instruction at K-12 and technical education at post-high school. To do so would eliminate the application process. Hence in Ohio we have very thoughtfully used the term career-technical to show the need to integrate career education, technical education, and academic education at all levels, K-16. Clearly the intensity of specific experiences vary considerably with grade level (I wouldn't propose having first graders use full blown CAD systems) but they must all go hand in hand. Put another way, few of us study the theoretical underpinnings of a computer and then move to hands on applications. We dig in, use the computer, consult the manuals, seek guidance, and progress. Watch young children learn technology. They are fast learners because they start with theory and application at the same time. I'm just suggesting we build this same concept into all levels of education.

Please don't confuse our concept of career-technical education with traditional vocational education. They are significantly different. I accept your argument that we need to define it better and Ohio hopes to join the effort to do so over time.

Speaking of time: I would propose that an integrated system will actually save time and make more learning possible in shorter times, thus negating the need to choose between academic, career, or technical at various levels.

Thanks for the discussion. (Posted February 22, 2000)

One stat from the state of Florida where they use a social security follow up system is as follows. Note this is not a research or sample process. This is census data drawn from actual university data systems on a per pupil basis.

High school graduates of 1990-91 (N = 79,928)

Status as of 1995 - Highest education achieved
- High school diploma - 85.4%
- Associates degree - 7.1%
- Bachelors degree - 3.2%
- Other - remaining

In other words, only 3.2% had completed a bachelors degree in 4 years. Subsequent tracking has shown this to go up slightly, but not near the levels most people believe to be true.

Source: Lanham, et. al., Comparison of Outcomes for The Graduates of 1990-91, 1997, Florida (Posted February 10, 2000)
Robert D. Sommers, Ph.D., Associate Director, Ohio Department of Education, Office of Career-Technical and Adult Education

The college completion statistics for Florida cannot be correct for some areas, as states such as Washington have a much higher level of ADULTS with BA and BS degrees. They did not all earn them late in life. If these statistics are correct for Florida, I would wonder who is running their IT and technology businesses?

Regarding dropout prevention: I am working in an alternative school for the first time in my 30 years of teaching, and finding these potential dropouts quite capable. I've been assessing their reading and math skills, and have never tested such an average bunch! Few have low skills; most are just not the paper-and-pencil learners schools tend to reward. Most work part time, and some do indeed have problems with substance abuse and obeying the law. However, I'm not sure the ratio of users and lawbreakers is that much higher than in the "regular" high school; these students are just more open about it.

Given a flexible, hands-on, and high personal involvement type of program, these students do not necessarily drop out especially in small towns like ours where there is nothing to do. The question I have is whether they are receiving the type of education that prepares them for the careers they are capable of, when they are not encouraged to take higher-level math or science courses, or to go into IT careers. (Posted February 10, 2000)
Sandra Smith, Teacher, Sequim Schools, Washington

I'm new the list today. It looks great. Something already caught my attention. Someone made the comment that everyone should go to community college; but that not everyone needs to go to [a four year] college. While I agree that everyone needs to pursue further education, I would contend that an equally proper course would be to enter a apprenticeship for one of the skilled trades. (Posted February 10, 2000)
Robert W. (Bob) Baird, Vice President, Apprenticeship and Training, Standards, and Safety, Independent Electrical Contractors, Inc. (Association), Alexandria, Virginia

I have been reading this discussion with interest. I like the "and" between Career and Technical not because they are different, but because all of that is taught in that area is not all technical but is a career.

I have to go back to one of my early submissions on another topic on the demise of this area. Teaching lower level math in a major high school in Northern Virginia, I come across many who are ideally fit for this sort of education, but alas, they have to have 4 math credits to get the standard HS diploma from the state. Why? Our Governor and his minions are sure that all will attend U VA or some other 4-year institution at the age of 18 and, of course, will graduate with honors! In his dreams! Even President Clinton called for all to go to college - and he apparently did not mean the CC. I have guidance counselors tell kids they need the advanced diploma to get into a college (wrong) but these kids can't even work an equation. Yet, they cannot get into the career OR technical field as they are forced into the academic track and tested with standardized tests. They will not be successful and so we will send them into the world with no skills and not training and few prospects. This all begs the discussion on semantics!

What do we need to do? Maybe we need to integrate courses with the CC on a nationwide basis so that students interested in both Career and technical training (not necessarily a diploma, maybe a certificate) can attend the CC, get the training, and at the same time finish high school or get a GED at the minimum.

Yet I hear parents saying that they know their child needs a college diploma to be successful (after they paid over $50/hour to the auto mechanic and plumber). They also had trouble getting one as they were backed up and in short supply - but would it be right for THEIR child?

So where do I end - back at the parent. If we could get to them we could get to the school boards, we could get to the politicians, we night actually then be making a difference in the lives of the students! Then the semantic battle will fade into the distance! (Posted February 23, 2000)
George D. Bond, II; Math Teacher, Woodbridge Senior High School, Prince William County Public Schools, Woodbridge, Virginia

You may be right, Bob, that everybody doesn't HAVE to go to college. The reason so many are going to college and flunking out or just leaving after a semester or two is that they had no motivation for going in the first place (to prepare for something - like a career?).

However, considering the academic performance - not to mention skill attainment - of graduating seniors, I propose that ALL students have at least two years of community college. Why not just assume that young people go to "grades 13-14"? This is where they acquire the competencies and skills they will need in "the real world" anyway. Why wait until you're 27 to come back to college to get the skills you need to get a good job? One way to encourage students to do this is to do a 6-year plan instead of a 4-year plan when they enter high school. We'd be surprised how many would automatically enroll in college-who would not otherwise do so - just because we asked them to plan for it as freshmen. (Posted February 10, 2000)
Stewart Farley, State Department of Education, Santa Fe, New Mexico

A lot of what I teach is physics, math, etc. I often work with the science dept at my school. The only difference is that I teach them how to use a tool or piece of equipment that applies the skills & knowledge that someone else is trying to teach them elsewhere. Many of my students simply have to see it WORK, how does it, why does it, etc. Then every one of them says "Why didn't they show me or tell me this before. Now it makes sense." Does anyone else get this?

How do you work with other "acad" dept. I'm lucky because I've a good working relationship with them, but I know others sometimes don't. (Posted February 10, 2000)

Many of our students need the direction that voc ed helps provide. I look at my job as steering them in the right direction. I always tell them they may find out that a 4 yr degree is not for them. However, if they ever want to become management and/or make more money they will have to take some college classes. These will always help to further anyone's career. Education is what makes this difference. We need to encourage them to not be afraid, to try to succeed, be it through traditional associate degrees, certification, trades school, etc. However, many kids aren't aware of the opportunities that are out there for them. We need to find a way to get these options out there and get the general public to see this. Does anyone have options that they use to promote this in their states? (Posted February 10, 2000)
Rachel Baxter, Technology Education Instructor, Thornton MS: Cypress Fairbanks ISD, Katy, Texas

I agree that many persons will not need formal postsecondary education to qualify for good jobs. That doesn't mean only a high school education is enough. Rather, it points to the rapid and growing importance of on-the-job training both through apprenticeships and by other means. The general principle, it seems to me, is "A HIGH SCHOOL EDUCATION BY ITSELF WON'T BE ENOUGH FOR MOST GOOD JOBS". Do you agree? (Posted February 12, 2000)

Dr. Robert Sommers - Thank you for the conceptual piece you distributed to persons on the "career development" listserv. I read it with much interest.

I find myself very worried by your use of the term "career-technical education". So far as I can tell, that term has yet to be defined. True, we have good definitions for both "career education" and for "technical education" but we have no equally clear definition of the term "career-

technical education." Until and unless that term is defined and a wide consensus on that definition is written, the term itself should not be used.

When AVA changed its name to "Association For Career And Technical Education," I assumed that title was intended to represent a combination of "career education" and "technical education" - after all, that is what the title of the association says. Note use of the word "and" in the title. That's the key word - and it was not put into the title of the Association by accident. Had those who made the title of our association intended it to be the "Association for Career-Technical Education", they would have said so - wouldn't they? It certainly seems so to me.

My conceptual view is that members of ACTE working at the K-12 level will place their primary emphasis on career education - including providing youth with the basic academic skills, good work habits, positive work values, and both career awareness and career exploration experiences. These kinds of activities pose many challenges to today's K-12 vocational educators.

Further, my conceptual view is that, at the postsecondary sub-baccalaureate level, ACTE members place their primary emphasis on providing students with specific career skills needed for success in the emerging high tech information society. This will be possible only if, at the K-12 level, good career education has been provided. Taken together, "career education" and "technical education" will ready persons for career success in the rapidly changing occupational society.

In saying this, I am very much aware that many ACTE members will strongly disagree with me primarily because of their belief that "specific vocational skills" leading to preparation for specific occupations belongs at both the K-12 and the postsecondary levels. I do not think we have either the time or the ability to provide K-12 students with true technical education.
(Posted February 21, 2000)
Dr. Kenneth Hoyt, University Distinguished Professor of Education, Kansas State University, Manhattan, Kansas

APPENDIX E: PARTICIPANTS IN NEED SENSING NETWORKS THROUGH THE YEAR 2000

The following is a listing of the individuals who had agreed to participate in the need sensing networks in the five regions as of December 31, 2000. Not all of the individuals listed actually took part in conference calls. They are listed by region and then alphabetically within regions by network, state, and last name.

Region	Network	Post/Sec	State	LastName	FirstName
1	Bus/Union/Assoc		DC	Wilson	Michael
			ME	Bazinet	Greg
			ME	Martin	Lisa
			PA	Hartwigsen	Fred
	Director Rep	Post	CT	Gross	Karen S.
			DC	Holstead	Ronald
			MA	Motta	Janice C.
			MD	Sumler	David
			ME	Crocker	Gary F.
			NC	Rodgers	Brenda
			NH	Wisbey	Thomas
			NJ	Nespolti	Larry
			NY	Brown	Robert T.
			RI	White	Julie M.
			VA	Oliver	Arnold R.
			VT	Flies	Richard
		Sec	CT	Marcoux	Lee
			DC	Fredette	Judith Ann
			DC	Torrence	Edward
			DE	Atkinson	Lewis L.
			MA	Kane	Francis J.
			MD	Oliver	Katharine M.
			ME	Cassidy	Vinton
			ME	Gilbert	Charleyne
			ME	Lyons	Christopher D.
			NH	Bos	Steve
			NH	Brannon	Don
			NJ	Henry	Thomas A.
			NY	Stevens	Jean C.
			RI	Cooley	Vanessa
			VA	Brown	Kay
			VT	Stander	Charles
		Both	DC	Bell	Cynthia M.
			PA	Brown	John
	Instructor	Sec	PA	Baker	MeeCee
			PA	Fiumara	Fred
			PA	Williams	Greg
	Racial/Ethnic		DC	Lufkin	Mimi
			NC	Hendrix-Frye	Helena
			NC	Randolf	Willie

Region	Network	Post/Sec	State	LastName	FirstName
1	Teacher Ed		DC	Belton	Cynthia
			ME	Bazinet	Greg
			PA	Erwin	Nancy
			PA	O'Brien	Tom
			VA	Eschenmann	Kurt
2	Bus/Union/Assoc		AL	Fannon	Dave
			AL	Stringer	Eric
			FL	Brown	Allen
			FL	Reboso	Melissa
			GA	Schelar	Scott
			KY	Barger	Steve
			MS	Thomas	Mike
			MS	Walker	George
			WV	Wyant	Laura
			WV	Mahoney	Tom
	Director Rep	Post	AL	Hughes	Matthew
			FL	Kiser	Sally
			GA	Fredeking	Heather
			KY	Wade	Charles
			MS	Alley	Nancy
			MS	Stonecypher	Wayne
			OH	Tafel	John
			SC	Brandstadter	Dianne
			WV	Skidmore	James L.
		Sec	AL	McGuire	John
			FL	Cordill	Nancy
			GA	Dohrman	Susan
			OH	Melvin	Vicki
			SC	O'Sullivan	Wofford
			WV	Hopkins	Stanley
	Instructor	Post	AL	Haney	John
			FL	Brown	Mark
			GA	Collins	Dave
			KY	Wathen	Jim
			MS	Hooper	Mary
			OH	Rezin	Andrew
			SC	Skubal	Jacqueline
			TN	Spohnholtz	Tom
			WV	Thorne-Newcome	Beth
		Sec	AL	Deaton	Dennis
			FL	Jensen	Marianne
			GA	Rennie	Rhenida
			GA	Robinson	Marie
			KY	Bowles	Rhonda
			MS	Stidham	James
			OH	Mastroianni	Sharon
			SC	Sloan	David
			TN	Berry	Bronson
			WV	Webb	Carol

Region	Network	Post/Sec	State	LastName	FirstName
2	Racial/Ethnic		AL	Merk	Jim
			FL	Hays	Karen
			GA	Smith	Danny
			KY	Fortson	Lawrence
			KY	Porter	Diane
			OH	Lawson	Howard
			SC	Glenn	Sherry
			SC	Robertson	Jerry
			WV	Cary-Davis	Jean
			WV	Faulkner	Susan
3	Bus/Union/Assoc		AR	Miller	Louise
			IL	Stromberg	Eldon
			MO	Allen	Neva
			MO	Breshears	Ronald G.
			OK	Keen	Larry
			OK	Tucker	Robert D.
			WI	Peters	Diane
	Director Rep	Post	IL	Lanning	Carol
			LA	Buck	Bob
			MO	Barnes	Terry
			MO	Wittstruck	John
			TX	Boyd	Molly
			WI	Halloran	James
		Sec	AR	Aist	Gene
			AR	Davidson	John
			IL	Klit	John
			IL	Parke	Scott
			IN	Fields	Terry
			IN	Stanley	Jeffrey M.
			LA	Husher	Sue
			MI	Miller	Mary
			MI	Stacy	Carole
			MO	Harden	Dennis D.
			OK	Ellibee	Margaret
			OK	Nagle	Martha
			TX	McCain	Ward N.
			WI	Albrecht	Bryan
	Instructor	Post	IL	Marucco	Toni
			LA	Calloway	Kim
			MI	Kennedy	Sharon
			MO	Owen	Karen
			OK	Patterson	Barbara
			WI	Davis	Jim
		Sec	AR	Hays	Annette
			IL	White	Mike
			LA	Baxter	Linda
			MI	Dean	Jan
			MO	Knowles	Patricia
			OK	Allen	Bill
			OK	Farquhar	Bruce
			WI	Wagner	Jane

Region	Network	Post/Sec	State	LastName	FirstName
3	Racial/Ethnic		AR	Young	Clevon
			IL	Azcoitia	Carlos
			LA	Doucet	Shirley
			MO	Brewster	Mary
			OK	Jones	Alberta
			OK	Montgomery	Clyde
			WI	Vue	Thai
	Teacher Ed		AR	Arn	Joe
			IL	Anderson	Marcia
			LA	Myers	Lori
			MI	Cory	Ed
			MO	Stewart	Bob
			OK	Osgood	Virginia
			OK	Warren	Joan
4	Bus/Union/Assoc		CO	Martinez	Dominic
			MT	Judge	Don
			NE	Mullin	Phil
			NM	Langley	Larry
			SD	Sheehan	Cindy
	Director Rep	Post	CO	Johnson	Christine
			CO	Zarlow	Norma J.
			IA	Garey	Jerda
			KS	Peck	Susan
			MN	Allen	Deena B.
			MN	Jacquart	Mary
			MT	Parisot	Arlene H.
			ND	Overboe	Helen
			NE	Baack	Dennis
			NM	Farley	Stewart
		Sec	IA	Foelske	Roger
			KS	Hines-Starr	Merlyne
			MN	Mecklenburg	Jim
			MN	Strom	Tom
			MT	Gray	Gail
			ND	Boekes	Wayne
			ND	Rood	Dan
			NE	Campbell	Richard
			NM	Olix	Robert
			SD	Keating	Patrick
			SD	Nelson	Larry
			SD	Smith-Rockhold	Gloria
	Instructor	Post	CO	Bradney	Jim
			CO	Plank	Debi
			NB	McGahan	Marilyn
			SD	Skatvold	Ron
		Sec	CO	Acheson	Suzanne
			CO	Bublitz	Carol
			CO	Fuller	Don
			CO	Hutchinson	Atman

Region	Network	Post/Sec	State	LastName	FirstName
4	Instructor	Sec	MN	Wilkosz	Joan
			NB	Wise	Rachel
			SD	Moore	Kristin
	Racial/Ethnic		CO	Romero	Tony
			MN	Higgins	Art
			WY	Medina-Flagg	Dora
	Teacher Ed		CO	Ginsberg	Rick
			IA	Martin	Robert
			MN	Larkin	Alice
			MT	Williams	Sandra
			ND	Melgaard	Dave
			NE	Renzelman	John
			NM	Barrett	Chandler
			SD	Andera	Tim
			WY	Bennett	Rob
5	Director Rep	Post	AK	Redman	Wendy
			AZ	Hall	Gordon
			CA	Morrow	Victoria
			HI	Rota	Michael
			ID	Petersen	Dan
			NV	Meyer	Katrine
			OR	Harpole	Greg
			UT	Wixom	Gary
			UT	Maughan	Richard
			WA	McConnon	Dan
		Sec	AK	Thompson	Barbara
			AZ	Bootsma	Helen
			CA	King	Ed
			HI	Moriwake	Rodney
			ID	Rush	Mike
			NV	Rich	Phyllis
			OR	Noor	Salam
			UT	Brems	Robert
			WA	Kester	Kyra